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Clamart, 14 June 2004

International Patent Application no. PCT/EP03/10005
Applicants: Services Pétroliers Schlumberger et al.
Our Ref: WO 21.1110

Dear Sirs,

I refer to the Written Opinion dated April 28, 2004 and enclose herewith triplicate copies of an amended set of claims to replace the claims presently on file.

The new set of claims comprises new independent claim 1 and 11 dependent claims numbered 2 to 12. New independent claim 1 is based on claims 1 and 2 as filed.

With regard to the specific comments in item V of the written opinion, the applicants comment as follows:

The new set of claims is believed to overcome the objection of novelty raised against claim 1 as filed. New independent claim 1 specifies the spreading mechanism of the arms of the sonde according to the invention. This mechanism ensures that the downstream and the upstream arms fold appropriately each time the sonde goes past a constriction while avoiding, in any circumstances, jamming or deformation of said arms.

Document GB 2294074 describes several embodiments for a logging sonde in deviated or highly deviated wells. However, this document neither describes nor suggests all of the characteristics of new claim 1. Figure 1 of said document shows a middle arm 54 that is not connected to any extremity of the pad 32 but intermediate said extremities as mentioned page 10, l.10-13. This middle arm does not participate to the spread of the sonde but follows the spread of the principal arms 26 and 40. In a second embodiment, shown on figure 2, only the extremity of the upstream arm 90 is

connected to the tool body 100 by means of a sliding pivot link, while the extremity of the downstream arm 84 is connected to the tool body 76 by means of a pivot link only (see description page 11, l.23-25). In the embodiment shown on figure 6, the extremities of the upstream and downstream arms are again connected through pivot links to the pad 242.

Therefore, none of the cited documents describes or suggests the connection between the arms and the pad of the sonde in the manner described in new claim 1.

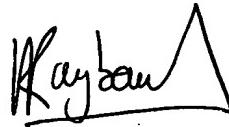
The applicants believe that this response addresses the issues raised by the examiner and request that a further written opinion be prepared dealing with any issues of patentability.

The applicants also request that the entry for this application concerning the representative be amended as follows :

Hélène RAYBAUD
Intellectual Property Law Department.
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1, rue Becquerel, BP 202
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Please confirm this amendment.

Yours faithfully,



Hélène RAYBAUD
European Patent Attorney

Encl.

CLAIMS

1/ A measuring sonde (1) for a hydrocarbon well, the sonde comprising a main body (2), a downstream arm (3), and an upstream arm (5), at least one of said arms being fitted with measurement means (6) for determining the characteristics of the fluid flowing in the well, the sonde being characterized in that said downstream and upstream arms are connected:

- to the main body respectively via first and second sliding pivot links (A and E); and
- to respectively first and second ends of a skid (4) via first and second pivot links (B and D).

2/ A measuring sonde according to claim 1, characterized in that pivoting of the downstream and upstream arms relative to the skid is limited by the presence of abutments on the first and second pivot links.

3/ A measuring sonde according to claim 1 or claim 2, characterized in that it has a secondary arm (7) connected firstly to the main body via a third pivot link (F) and secondly to the skid via a third sliding pivot link (C).

4/ A measuring sonde according to claim 3, characterized in that the secondary arm includes optical measurement means (8).

5/ A measuring sonde according to claim 3 or claim 4, characterized in that the secondary arm is constituted by two parallel blades.

6/ A measuring sonde according to any one of claims 3 to 5, characterized in that the secondary arm (7) can be received inside the downstream arm (3).

7/ A measuring sonde according to any preceding claim, characterized in that the downstream arm and/or the upstream arm is/are constituted by parallel blades interconnected by bridges.

8/ A sonde according to any preceding claim, characterized in that the axis of the main body (2) is off-center relative to the axis of the well.

9/ A measuring sonde according to any preceding claim, characterized in that the downstream and upstream arms are pivoted relative to the main body in a closed position in which the arms are received inside said main body and an open position in which said arms extend across the stream flowing along the well.

10/ A measuring sonde according to any preceding claim, characterized in that the downstream arm and/or the upstream arm is/are connected to a motor module (9) enabling arm movement relative to the main body to be controlled, said motor module being deactivatable.

11/ A measuring sonde according to claim 10, characterized in that the connection between the motor module and the downstream and/or upstream arms is separable.

12/ A measuring sonde according to any preceding claim, characterized in that the upstream arm has measurement means (6) for measuring the speed of the fluid flowing in the well.